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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,916	11/18/2003	Eric Howard Klingenberg	06471 USA	6531

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AIR PRODUCTS AND CHEMICALS, INC.
PATENT DEPARTMENT
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EXAMINER

SERGEANT, RABON A

ART UNIT	PAPER NUMBER
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1711

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/715,916

Applicant(s)

KLINGENBERG ET AL.

Examiner

Rabon Sergeant

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-17, 19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-17, 19, and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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1. Claims 3, 6, 9, 10, 15-17, 19, and 21-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 3, 6, 9, and 10, the position is maintained that applicants have failed to specify bases for the claimed weight percents. The examiner has reviewed applicants' response; however, it is unclear how the response addresses anything other than the diisocyanate component of claim 3.

With respect to claims 6 and 21, the claims depend from cancelled claims.

With respect to claims 15-17, 19, and 22-25, despite applicants' response, the position is maintained that in view of the use of the word, "substantially", it is unclear what degree of crystallinity may be present and still satisfy the language, "substantially non-crystalline" and "substantially free of crystallinity". Applicants have argued that one of ordinary skill would know how to use a differential scanning calorimeter to determine the degree of crystallinity; however such a response fails to address what quantitative limits must be adhered to in order for the polymer to be "substantially non-crystalline" or "substantially free of crystallinity". The examiner has reviewed page 22 of the specification; however, the disclosure does not define what amount of crystallinity is permitted by "substantially".

With respect to claim 25, it is unclear what degree of tack is denoted by the term, "tacky".

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 6-17, 19, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schafheutle et al. (US 2003/0083457 A1) in view of Kobylanska et al. ('070), Dochniak ('807), Klauck et al. ('433), Seneker et al. ('382), and Shikinami et al. ('077).

Schafheutle et al. disclose the production of aqueous dispersions of polyurethanes having preferred weight average molecular weights of at least 40,000 g/mol and at least 51,000 g/mol (paragraphs [0008] and [0011]), wherein a prepolymer, initially produced from the reaction of a diisocyanate, including tetramethylxylene diisocyanate, with a polyol, including polypropylene glycol, and a reactant having at least two isocyanate-reactive groups and a group capable of forming anions, is neutralized with an amine, chain terminated, dispersed in water, and chain extended with a diamine. See abstract and paragraphs [0008], [0012]-[0015], [0019], [0025], [0028], [0032], [0033], [0035], [0037], [0041], and [0044]-[0049]. The disclosures within paragraphs [0015], [0041], and [0044] indicate that there is latitude with respect to the sequence of neutralization, chain termination, dispersion, and chain extension; however, given these disclosures, the position is taken that the instantly claimed sequence would have been obvious to

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one of ordinary skill in the art, because one would have expected the same product to result regardless of whether neutralization or chain termination occurs first.

4. While Schafheutle et al. disclose the use of tetramethylxylene diisocyanate and polypropylene glycol, other reactants are disclosed as being suitable. However, the use of tetramethylxylene diisocyanate and polypropylene glycol in the production of aqueous polyurethane dispersions, including their combined use, was well known at the time of invention. Kobylanska et al. and Dochniak disclose that the use of TMXDI in the production of polyurethane dispersions is advantageous, because the products possess lower viscosity and require less solvent. Seneker et al. disclose that the use of polypropylene glycol within polyurethane dispersions display improved properties relative to the use of other polyols. Klauck et al. teach the benefits of using both tetramethylxylene diisocyanate and polypropylene glycol within aqueous polyurethane dispersions. Given these teachings, concerning the advantages of using tetramethylxylene diisocyanate and polypropylene glycol, the position is taken that it would have been obvious to select these components from the teachings of the primary reference and utilize them in the production of aqueous polyurethane dispersions. Furthermore, the primary reference is silent regarding the incorporation of the claimed ionic additive (B) and applicants' claimed resistivity; however, the incorporation of such additives within polyurethanes was known at the time of invention as a means for tailoring the conductivity or resistivity of the polyurethane. This position is supported by the teachings of Shikinami et al. at column 13, lines 6-44. The secondary reference discloses the compatibility of the ionic additives within aqueous solutions at column 13, lines 42 and 43. Therefore, it would have been obvious to one of ordinary skill in the art, seeking conductive urethane compositions, to incorporate the

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claimed salts into virtually any polyurethane, including aqueous dispersions thereof, and to tailor the desired conductive or resistive properties by controlling the concentration of the ionic additive.

5. The examiner has considered applicants' arguments of December 11, 2006; however, the position is maintained that the examiner has presented adequate rationale and motivation to establish why it would have been obvious to utilize the claimed isocyanate and polyol within the composition of Schafheutle et al. Furthermore, the examiner has set forth the requisite motivation establishing why it would have been obvious to utilize ionic additives within the polyurethane to control the conductivity or resistivity of the polyurethane. Regarding applicants' argument concerning the non-crystallinity of the polyurethane, it is noted that claim 1 is not limited in accordance with applicants' remarks. Furthermore, the examiner has established why it would have been obvious to utilize polypropylene glycol in the derivation of the polyurethane. Therefore, given the use of polypropylene glycol, one of ordinary skill in the art would have reasonably expected that the resulting polyurethane would be amorphous or non-crystalline. This position is supported by the teachings of Szycher at page 3-27 (See the section titled, "Factors Affecting Crystallinity of Polyurethanes). Accordingly, the non-crystallinity of the instant polyurethane is not considered to constitute an unexpected property. Finally, applicants' arguments with respect to the claimed weight average molecular weight have been considered; however, as aforementioned, the primary reference clearly discloses that weight average molecular weights of at least 40,000 g/mol are preferred; therefore, one of ordinary skill would have been motivated to produce polyurethanes having the claimed molecular weights. The examiner has considered applicants' argued examples having molecular weights of 28,245

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g/mol, 53,105 g/mol, and 91,938 g/mol; however, these examples are insufficient to establish that the claimed molecular weight range is critical for the following reasons. Firstly, the molecular weight of the 28,245 g/mol example is far below the preferred range of the primary reference; therefore, this example is not representative of the prior art. Secondly, despite applicants' arguments, it is by no means clear that the 53,105 g/mol example displays unexpectedly improved properties relative to the 91,938 g/mol example, because the peel strengths for both examples appear to be comparable and relative to the other examples in Table III, far superior. Furthermore, it is not clear that the Ease of Lamination results are unexpected, since the results appear to follow a trend of increasing with increasing molecular weight. Lastly, a single example having a 53,105 g/mol molecular weight is insufficient to establish unexpected results for a claimed range of 40,000 to 60,000 g/mol. It has been held that the claims must be commensurate in scope with any showing of unexpected results. *In re Greenfield*, 197 USPQ 227. It has further been held that a limited showing of criticality is insufficient to support a broadly claimed range. *In re Lemin*, 161 USPQ 288. In summation, for the reasons set forth, applicants' response is insufficient to overcome the prior art rejection.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to R. Sergent at telephone number (571) 272-1079.

R. Sergent
March 14, 2007


RABON SERGENT
PRIMARY EXAMINER